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ac susceptibility and static magnetization measurements of CeRu2Si2 at small magnetic fields and ultralow temperatures

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Abstract

The magnetic properties of CeRu2Si2 at microkelvin temperatures (down to 170 μK) and ultrasmall magnetic fields (0.02~6.21 mT) are investigated experimentally. The simultaneously measured ac susceptibility and static magnetization show neither evidence of the magnetic ordering, superconductivity down to the lowest temperatures nor conventional Landau Fermi-Liquid behavior. The results imply the magnetic transition temperature in undoped CeRu2Si2 is very close to absolute 0 K. The possibility for proximity of CeRu2Si2 to the quantum critical point without any doping is discussed.